UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/708,775	11/07/2000	Andreas Schilling	18235-04727	2520

7590 09/24/2003

John R Carr
Fenwick & West LLP
Two Palo Alto Square
Palo Alto, CA 94306

EXAMINER	
HAVAN, THU THAO	
ART UNIT	PAPER NUMBER
2672	4

DATE MAILED: 09/24/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/708,775	SCHILLING ET AL.	
	Examiner	Art Unit	
	Thu-Thao Havan	2672	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *07 November 2000* .

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *16-24 and 29-53* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *16-17, 19-24, and 29-53* is/are rejected.

7)☒ Claim(s) *18* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11)☐ The proposed drawing correction filed on _____ is: a)☐ approved b)☐ disapproved by the Examiner.

If approved, corrected drawings are required in reply to this Office action.

12)☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

13)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____ .

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).

a) ☐ The translation of the foreign language provisional application has been received.

15)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 5 .
4) ☐ Interview Summary (PTO-413) Paper No(s). _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: .

DETAILED ACTION

Drawings

This application has been filed with informal drawings which are acceptable for examination purposes only. Formal drawings will be required when the application is allowed.

Claim Objections

Claim **18** is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Re claim **18**, the prior art fails to anticipate or rendered obvious the claimed features of calculating a tensor of inertia from texel values, determining an eigenvector having a smallest eigenvalue form tensor, multiplying smallest eigenvalue eigenvector with texel values.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (e) the invention was described in a patent granted on an application for patent by another filed in the United States before the invention thereof by the applicant for patent, or on an international application by another who has fulfilled the requirements of paragraphs (1), (2), and (4) of section 371(c) of this title before the invention thereof by the applicant for patent.

Claims **16-17, 19-24, and 29-53** are rejected under 35 U.S.C. 102(e) as being unpatentable by Powell, III (US patent no. 6,292,194).

Re claim **16**, Powell teaches a method for mapping a texture onto a surface of a computer generated object represented by a plurality of pixels, comprising the steps of dividing a texture map into blocks, the texture map comprising a plurality of texels, each texel having an associated value (col. 3, lines 30-60), determining two block values for each block which block values are representative of the values of texels in the block (col. 16, lines 13 to col. 17, line 26), compressing the texture map by assigning to each texel one of the block values associated with the block of which it is part and mapping compressed texture map onto the surface of the computer generated object (col. 22, line 36 to col. 25, line 30). In other words, Powell teaches a method for still image compression reduces pixel and texture memory requirements in graphics rendering and other applications. The image compression method divides an image into blocks and stores a quantization index (QIndex) for each block that reflects the level of quantization applied to the block. The QIndex is an index into a table of QFactors. The method performs an invertable transform on a block to generate coefficients for spatial frequency components in the block. It then quantizes coefficients in the block by dividing them by the QFactor in the table corresponding to the QIndex for the block. The QIndex enables the compression ratio of an image to vary across blocks and within each block. A control structure associated with the image stores a pointer to each of the blocks in an image. This control structure allows each block to be accessed and decompressed independently.

Re claim **17**, Powell discloses block values associated with the texture map are quantized to a smaller number of bits (col. 6, line 67 to col. 7, line 16). Powell teaches

high-end systems utilize eight bits for each of three-color components and often also include an eight bit alpha value. Low-end systems compress these 32 bits per pixel to as few as four bits by discarding information and/or using a color palette to reduce the number of simultaneously displayable colors.

Re claims **19, 30, and 53**, Powell discloses texture map corresponds to a filtered texture map of lesser detail than a texture map of full detail (col. 35, lines 49-65).

Re claims **20 and 36-37**, Powell discloses mapping compressed texture map onto the surface of the computer generated object comprises for each pixel which represents the computer generated object, accessing compressed texture map at least one time, and responding to compressed texture map being accessed more than one time by interpolating results of the accesses (col. 16, line 27 to col. 17, line 26). Powell teaches the filter kernel can be an anisotropic filter or an isotropic filter. Where anisotropy is not required, the filter kernel can use negative lobes allowing much sharper textures than is possible with tri-linear interpolation. The texture filter engine also handles Z-comparison operations for computing effects on shadows. In addition, he teaches the setup block calculates the linear equations which determine the edge, color, and texture coordinate interpolation across the surface of the triangle. These equations are also used to determine which texture blocks will be required to render the triangle. The edge equations are also passed to the scan conversion block and are stored in the primitive registers until required by the scan convert engine.

Re claims **21, 31, 33, 39, and 48**, Powell discloses mapping compressed texture map onto the surface of the computer generated object further comprises approximating

true pixel color by performing a number of texturing operations according to a geometric shape of a projection of a pixel on the texture and averaging results of texturing operations (fig. 4). In other words, Powell teaches the system typically performs a series of geometric transformations on the vertices of the polygons. Figure 4 is a block diagram illustrating portions of an image processor for rendering geometric primitives

Re claims **22 and 50**, Powell discloses texture is an environment map (col. 58, lines 5-16). Powell teaches the concepts of still image compression can apply in a variety of contexts as well and are not necessarily limited to graphics rendering environments.

Re claims **23, 29, and 40-44**, Powell discloses at least one of texture mapping environment mapping, reflectance mapping and detail mapping is carried out in real time using dedicated arithmetic units (col. 6, lines 34-44). Powell teaches a typical 3-D graphics application (particularly an interactive game) trades off geometric level of detail to achieve higher animation rates. Gsprites allow the system to utilize two additional scene parameters--temporal level of detail and spatial level of detail--to optimize the effective performance as seen by the user. The spatial resolution at which the image of an object is rendered does not have to match the screen resolution at which it will be rendered. Further, the system can manage these trade-offs automatically without requiring application support.

Re claims **32, 46, and 49**, Powell discloses each block value represents the luminance of a texel (col. 49, line 62 to col. 51, line 48). Powell teaches one implementation of the compression method supports both lossy and lossless

compression. The lossy form of image compression has two stages: a lossy first stage, and a lossless second stage. The lossy form of compression begins with an optional color space conversion from red, green, blue (R, G, B) intensity values to luminance (Y) and chrominance (U and V, also referred to as Cr and Cb) values. The lossy stage includes a direct cosine transform (DCT) and a quantization that reduces the accuracy of certain frequency components.

Re claims **38 and 47**, Powell discloses each decompressed texel value represents an index into a look-up table (col. 43, line 65 to col. 44, line 64; col. 48). In other words, Powell teaches gsprite engine operates at video rates to address and decompress the gsprite chunk data and perform the necessary image processing for general affine transformations (which include scaling, translation with subpixel accuracy, rotation, reflection and shearing). After filtering, the resulting pixels (with alpha) are sent to the compositing buffers where display pixel data is calculated.

Re claims **24, 35, 45, and 51-52**, the limitation of claims 24, 35, 45, and 51-52 are identical to claim 16 above. Therefore, claims 24, 35, 45, and 51-52 are treated with respect to grounds as set forth for claim 16 above.

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Morein, US patent no. 6,452,602

Fowler et al., US patent no. 6,339,428

Lauer et al., US Patent No. 6,262,740

Inquiries

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Thu-Thao Havan whose telephone number is (703) 308-7062. The examiner can normally be reached on Monday to Thursday from 9:00-5:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Michael Razavi can be reached on (703) 305-4713.

Any response to this action should be mailed to:

Commissioner of Patents and Trademarks

Washington, D.C. 20231

or faxed to:

(703) 872-9314 (for Technology Center 2600 only)

Hand-delivered responses should be brought to Crystal Park II, 2121 Crystal Drive, Arlington, VA, Sixth Floor (Receptionist).

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the Technology Center 2600 Customer Service Office whose telephone number is (703) 306-0377.

Thu-Thao Havan
Art Unit: 2672
September 20, 2003

MICHAEL RAZAVI
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2600